USSR

YELISEYEV, V. K., et al., Theory of Precision and Reliability of a Cybernetic System. Work of a Seminar -- Collection of Works, Issue 2, Kiev, 1968(1969), pp 12-15

flected signal); 2) Diascope, developed for multipurpose equipment which accomplishes the input of graphic information into a digital computer, with the image on a transparent carrier. For a decrease of the photometric error, it is proposed to introduce into the PCT with a scanning beam a compensating feedback with respect to the luminous flux, which is accomplished with the aid of an auxiliary photoelectron multiplier connected to the feedback circuit, and regulating the intensity of the light spot of the elctron-beam tube. Three illustrations and 12 references. N. S.

2/2

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--INFRARED SPECTRA AND STRUCTURE OF 5,SUBSTITUTED 2,AMINO,1,3,4,THIADIAZOLE DERIVATIVES -U-

AUTHOR-(02)-TSURKAN, A.A., TSURKAN, T.S.

COUNTRY OF INFO--USSR

SOURCE--FARM. ZH. (KIEV) 1970, 25(1), 30-3

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IR SPECTRUM, IR SPECTROSCOPY, TAUTOMERISM, SULFANILAMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/0345 STEP NO--UR/0491/70/025/001/0030/0033

CIRC ACCESSION NO--AP0127926

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127926

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOLLOWING THE SYNTHESIS OF AMINO 1,3,4,THIADIAZOLES, THE EXISTENCE OF TAUTOMERIC STRUCTURES (E.G. IMINO FORMS) WAS STUDIED BY IR SPECTROSCOPY. THE STRUCTURE OF THESE SULFANILAMIDES IS IMPORTANT IN CONNECTION WITH THEIR BIOL. ACTIVITY. THE CARBONYL GROUPS ARE CONJUGAGED WITH THE GREATER THAN C:N MINUS DOUBLE BOND FROM IMINO GROUPS. THUS, THE AMINO THIADIAZOLES ACRYLATED BY P BIS(BETA CHLOROETHYLAMINO)BENZENECARBOXYLIC ACIDS EXIST MAINLY IN THE AMIDE FORM. THE LARGEST AMOUNT OF THE IMINO FORM WAS OBSD. IN THE CASE OF THE P BIS(BETA CHLOROETHYLAMINO)BENZOYL DERIV. FACILITY: RYAZAN MED. INST., RYAZAN, USSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--ELECTRICAL PROPERTIES OF ZINC TELLURIDE EMISSIVE DIODES -U-

AUTHOR--TSURKAN, A.YE.

COUNTRY OF INFO--USSR

SOURCE--TR. KISHINEVSK. POLITEKHN. IN-T (WORKS OF THE KISHINEV
REFERENCE--RZH, ELEKTRONIKA I YEYE PRIMENENIYE, NO 3, MAR 70, ABSTRACT NO
DATE PUBLISHED--------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRIC PROPERTY, ZINC TELLURIDE, SEMICONDUCTOR DIODE, PN JUNCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0553 STEP NO--UR/0000/70/000/012/0039/0046

CIRC ACCESSION NO--AR0110360
UNCLASSIFIED

2/2 018 UNCLASSIFIED

CIRC ACCESSION NO--AR0110360 PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER EXPERIMENTALLY INVESTIGATES THE DEPENDENCE OF THE ELECTRICAL CHARACTERISTICS OF SEMICONDUCTOR DIODES OF ZINC TELLURIDE, DOPED WITH TELLURIUM, CESIUM, LITHIUM, AND PHOSPHOROUS, ON THE PHYSICAL AND CHEMICAL PROPERTIES OF THE CRYSTALS. THE VOLTAGE CURRENT CHARACTERISTICS AND THE DEPENDENCE OF THE CAPACITANCE OF THE P-N JUNCTION ON THE VOLTAGE ARE PLOTTED. AN INCREASE OF THE IMPURITY CONCENTRATION LEADS TO A DECREASE OF THE CURRENT DURING REVERSE BIAS. THE CHARACTERISTIC DEPENDENCE OF THE JUNCTION CAPACITANCE ON THE MAGNITUDE OF THE FORWARD BIAS VOLTAGE UP TO A VALUE OF 0.5 VOLT DOES NOT REVEAL AN EXPOTENTIAL CHARACTER OF THE CAPACITANCE GROWTH. ON THIS BASIS THE CONCLUSION IS MADE THAT UP TO A VOLTAGE OF 0.5 VOLT THE DIFFUSION CAPACITANCE DID NOT APPEAR. IN TERMS OF THE EXPERIMENTAL DEPENDENCE OF THE FORM OF THE VOLTAGE CURRENT CHARACTERISTICS ON THE TEMPERATURE, A WIDTH OF THE FORBIDDEN BAND OF 2.3 E.V. IS CALCULATED. THE LIFETIME OF THE CARRIERS FOR THREE TYPES OF SEMICONDUCTOR DIODES CHANGES IN THE RANGE (3.4-9) .10 PRIME NEGATIVE11 SEC. IT IS TAKEN INTO ACCOUNT THAT LITHIUM, PHOSPHOROUS, AND CESIUM CREATE SMALL ACCEPTOR LEVELS WITH WEAKLY DIFFERING ACTIVATION ENERGY IN THE ZINC TELLURIDE. THE TECHNOLOGY IS DESCRIBED FOR THE PREPARATION OF P-N JUNCTIONS, AND THE METHOD OF INVESTIGATION OF THE DEPTH OF LYING DOWN OF THE P-N JUNCTION.

UNCLASSIFIED

TSURKAN, A. YE.

JPRS 59208
6-73
3

III-11. GROWTH DIRECTION OF THE PURE AND ALLOYED SINGLE CRYSTALS OF ZINC TELLURIDE

[Article by V. I. Verlan, S. I. Radautsan, A. Ye. Tsurkan, Novosibirsk, III Simpozium po Protsessam Rosta Kristallov v Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 35]

The study of the directional growth of crystals was made in sealed quartz ampoules with graphite containers with a quartz jacket. The crystals were grown on a monocrystalline seed both from the vapor phase by the Piper method and from a melt by the directional crystallization method. The studies were made for different constant vapor pressure of zinc or tellurium and also with cesium, lithium or phosphorus additives present in the melt as the alloying admixture. It was established that for a zinc or tellurium vapor pressure above the equilibrium pressure the crystals are oriented by the side of the isographic orientation of the predominant growth direction. The crystal-lographic orientation of the predominant growth direction <111> has been studied for deviation from the stoichiometry. It has been demonstrated that with excess zinc vapor pressure above the melt the crystal is oriented by the (111)Te plane in the direction of the melt. The presence of one of the indicated admixtures in the melt with equilibrium pressure of the components leads to preferable orientation in the melt of the plane (111)Zn. The growth mechanism of crystals of the given compound has been studied. It is demonstrated that the crystallization process in the direction of the predominant growth is determined by the crystallographic ratio between the transient layer at the phase interface. The structure of the transition layer depends on the super-cooling of the melt (vapor) at the crystallization front, and it is determined by the electron structure of the melt atoms.

- 34 -

UDC 621.383.46

USSR

TSURKAN, A. Ye.

"Electrical Properties of Zinc Telluride Emissive Diodes"

Tr. Kishinevsk. politekhn. in-t (Works of the Kishinev Polytechnical Institute), Vyp 12, pp 39-46 (from RZh--Elektronika i yeye primeneniye, No 3, Mar 70, Abstract No 3B358)

Translation: The paper experimentally investigates the dependence of the electrical characteristics of semiconductor diodes of zinc telluride, doped with tellurium, cesium, lithium, and phosphorous, on the physical and chemical properties of the crystals. The voltage-current characteristics and the dependence of the capacitance of the p-n junction on the voltage are plotted. An increase of the impurity concentration leads to a decrease of the current during reverse bias. The characteristic dependence of the junction capacitance on the magnitude of the forward bias voltage up to a value of 0.5 volt does not reveal an exponential character of the capacitance growth. On this basis the conclusion is made that up to a voltage of 0.5 volt the diffusion capacitance did not appear. In terms of the experimental dependence of the form of the voltage-current characteristics on the temperature, a width of the forbidden

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USSR

TSURKAN, A. Ye., Tr. Kishinevsk. politekhn. in-t (Works of the Kishinev Polytechnical Institute), Vyp 12, pp 39-46 (from RZh--Elektronika i yeye primeneniye, No 3, Mar 70, Abstract No 3B358)

band of 2.3 e.v. is calculated. The lifetime of the carriers for three types of semiconductor diodes changes in the range (3.4-9) $.10^{-11}$ sec. It is taken into account that lithium, phosphorous, and cesium create small acceptor levels with weakly differing activation energy in the zinc telluride. The technology is described for the preparation of p-n junctions, and the method of investigation of the depth of lying-down of the p-n junction. 12 ref. K.S.

2/2

Epidemiology

UDC 619:616.981.51

USSR

TSURKAN, M. A., and POMIRKO, T. I., Veterinary Administration, Ministry of Agriculture, Moldavian SSR

"Natural Foci of Anthrax"

Moscow, Veterinariya, No 10, Oct 70, pp 57-58

Abstract: Anthrax has long been a common disease among cattle in the Moldavian SSR. Although the veterinary service is very active, many cases are still reported annually. The spread of the anthrax pathogen from previously infected areas and the appearance of new foci are due largely to the presence of humus-rich chernozem, the abundance of precipitation, and high temperatures. Some 64% of all cases of the disease in the republic occur in the northern forest-steppe zone, which occupies 44% of the total area. The predominant soil is chernozem, with some dark-gray forest soils. The central forest zone, which makes up 18% of the total area, is the site of about 8% of the cases. Gray and brown forest soils predominate along with some leached chernozem. The fewest cases of anthrax (28%) are reported in the southern and southeastern steppe zone, which embraces 40% of the total area. Ordinary, calcareous, and southern chernozem are the main soils in this zone.

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1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--INFRARED SPECTRA AND STRUCTURE OF 5,SUBSTITUTED 2,AMINO,1,3,4,THIADIAZOLE DERIVATIVES -U-

AUTHOR-(02)-TSURKAN, A.A., TSURKAN, T.S.

COUNTRY OF INFO--USSR

SOURCE--FARM. ZH. (KIEV) 1970, 25(1), 30-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IR SPECTRUM, IR SPECTROSCOPY, TAUTOMERISM, SULFANILAMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/0345 STEP NO--UR/0491/70/025/001/0030/0033

CIRC ACCESSION NO--AP0127926

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127926

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOLLOWING THE SYNTHESIS OF AMINO 1,3,4,THIADIAZOLES, THE EXISTENCE OF TAUTOMERIC STRUCTURES (E.G. IMINO FORMS) WAS STUDIED BY IR SPECTROSCOPY. THE STRUCTURE OF THESE SULFANILAMIDES IS IMPORTANT IN CONNECTION WITH THEIR BIOL. ACTIVITY. THE CARBONYL GROUPS ARE CONJUGAGED WITH THE GREATER THAN C:N MINUS DOUBLE BOND FROM IMINO GROUPS. THUS, THE AMINO THIADIAZOLES ACRYLATED BY P BIS(BETA CHLOROETHYLAMINO)BENZENECARBOXYLIC ACIDS EXIST MAINLY IN THE AMIDE FORM. THE LARGEST AMOUNT OF THE IMINO FORM WAS OBSD. IN THE CASE OF THE P BIS(BETA CHLOROETHYLAMINO)BENZOYL DERIV. FACILITY: RYAZAN MED. INST., RYAZAN, USSR.

UNCLASSIFIED

USSR

UDC 539.3

KULIYEV, G. G., TSURPAL, I. A., Kiev

"Stressed State of a Nonlinear-Elastic Plate with a Fastened Round Hole"

Kiev, Prikladnaya Mekhanika, Vol VII, No 4, 1971, pp 118-121

Abstract: The basic equations, boundary conditions and junction conditions are formulated for a nonlinear (cubic) law of the relation between the stresses and strains for the case of attaching circular holes by wide rings (generally speaking made of a different physically nonlinear material) in nonlinear-elastic plates. The nonlinear equations obtained are solved by the small parameter method. The problem of stress concentration near the solder in a nonlinear-elastic plate with pure shear at infinity is investigated as an example. The effect of the rigidity of the wide ring, the external load and the physical nonlinearity on the stress distribution in the plate with a round hole is demonstrated.

1/1

Radiation Chemistry

USSR

UDC 628.543.661.7

TSUTSARIN, V. V., BYALKOVSKIY, N. N., YATSUN, V. V., ZHIKHAREV, V. S., and VYSOTSKAYA, N. A., Institute of Physical Chemistry, Academy of Sciences UkrSSR, Chemical-Pharmaceutical Plant imeni Lomonosov

"Changes in the Oxidizeability of Aqueous Solutions of Some Organic Materials Due to the Action of Radiation"

Kiev, Khimicheskaya Tekhnologiya, No 3 (57), May-Jun 71, pp 12-15

Abstract: Oxidizeability characterizes total content of the reducing agents in water. It is expressed by the amount of oxygen needed for the oxidation of organic material contained in 1 l of solution to CO_2 and water. Changes of this oxidizeability in waste waters of the Kiev Chemical-Pharmaceutical Plant taking place upin γ-irradiation with a Co^{60} source were studied. These waters contain about 30 inorganic impurities and 70 of the organic nature. In addition, model systems containing methanol, isopropyl alcohol, phenol, metacrylic acid, and their mixtures were investigated. Irradiation was found to lower the oxidizeability, leading occasionally to formation of precipitates. The model system showed more pronounced lowering of the oxidizeability than natural waste waters, because the latter most probably contained many admixtures capable of oxygen consumption.

1/1

1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--CHANGES OF BLOOD SERUM PROTEIN FRACTIONS IN PATIENTS WITH MALIGNANT NEOPLASMS -U-

AUTHOR-(05)-TSUTSAYEVA, A.A., LOBASENKO, N.P., LYSENKO, A.I., ROZINOV, L.P., KHARCHENKO, V.F.

COUNTRY OF INFO--USSR

SOURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 99-101

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NEOPLASM, BLOOD SERUM, BLOOD PROTEIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1735 STEP NO--UR/0475/70/000/005/0099/0101

CIRC ACCESSION NO--AP0129103

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129103

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. PATIENTS WITH MALIGNANT TUMOURS SHOW A QUANTITATIVE QUALITIVE CHANGE OF THE BLOOD SERUM PROTEIN CONTENT. INCREASE OF BLOOD SERUM GLOBULINS AND DECREASE OF ALBUMINS, DECREASE OF THE ALBUMIN GLOBULIN COEFFICIENT IN ONCOLOGICAL PATIENTS ARE NONSPECIFIC OF THE TUMOR GROWTH. BUT AT THE SAME TIME THE BLOOD SERUM OF ONCOLOGICAL PATIENTS SHOWS AN ATYPICAL PROTEIN NOT CONNECTED WITH C REACTIVE PROTEIN, WHICH IS DETECTED IN THE ALPHA 2 FRACTION AND APPEARS REGULARLY AT THE II-III STAGES OF THE DISEASE. FACILITY: KAFEDRA MIKROBIOLOGII, KHAR'KOVSKOGO MEDITSINSKOGO INSTITUTA BIOFIZICHESKAYA LABORATORIYA, KHAR'KOVSKOGO NAUCHNO-ISSLED. INSTITUTA VAKTSII I SYVOROTOK, OBLASTNOY ONKOLOGICHESKIY DISPANSER.

UNCLASSIFIED

TSUTSKAREV, B. M.

UDC 550.83.08

ABSOLUTE MARINE COMPONENT MAGNETOMETER

[Article by G. V. Alekseyev, S. P. Bakalinsky, A. Ya. Rokhlaya, and B. M. Tsutskarev, Leningrad, Geofizicheskaya Apparatura, Russian, Vol 47, 1971, pp 35-40]

During the continual geomagnetic measurements in the waters of seas and oceans performed from the nonmagnetic vessel Zarya, the errors in measuring the components and modulus of the geomagnetic field were: $\Delta H = \Delta Z = \pm 100\gamma$, $\Delta T = \pm 40$. The difference in the measurements is caused by the fact that the relatively continual measurements of T by means of a ferrosounder magnetometer were controlled by the nuclear-precessional one, while for control of the H component, a dual compass was used, the mean error of which during relatively quiet weather was $\Delta H = \pm 100$ [Ivanov, 1966].

In 1967 a marine component quantum magnetometer was developed and constructed by the Leningrad branch of IZMIRAN [Institute of Terrestrial Magnetism, the Ionosphere and Radio Wave Propagation of the USSR Academy of Sciences] jointly with IZMIRAN Special Design Bureau, in which a self-oscillating cesium sensor of the T magnetometer was applied [Kozlov, 1965]. During measurements from the moving vessel, the component magnetometer was placed on a gyrovertical device.

For reducing the deviation caused by the ferromagnetic masses of the gyrovertical device, magnetometer sensor 1 (Fig. 1), with compensating rings 2, is removed the maximum possible distance from them with the aid of a shaft, 4, 0.9 meter long. The shaft is placed in two bearings in a cylindrical casing 5, fixed directly to the external gimbal 6 of the four-gyroscope gyrovertical device of the G2 type. The optical axis of the sensor is directed at an angle of 45° to the shaft revolution axis. A controlling device 3 permits compensating rings to rotate in two mutually orthogonal

JPRS 56099
25 May 72

USSR

UDC: 539.4.015.1

SOLIN, Yu. V., ROZHKOV, B. G., and TSVELEV, E. A., Engineers

"Controlling Layer Shifts in the Manufacture of Multilayer Printed Circuit Plates by the Open Contact Area Process"

Moscow, Pribory i sistemy upravleniya, No. 10, 1970, p 54

Abstract: The open contact area method is now used in many enterprises in the Soviet Union. Since the printed circuit layers are glued together in manufacture, one above the other, open areas must be allowed between layers for the insertion of leads to contact points within the printed circuit block. The purpose of this article is to present information on the electrical requirements this type of construction involves. Such requirements also involve specifications in the amount of tolerable shifts in the layers to avoid arcing between leads or between layer components. A table of the recommended dimensions of the various structural characteristics of the layer blocks is given together with a second table listing the minimum distances required to separate leads carrying different voltages. A photomicrograph of a section of the multilayer printed-circuit block is reproduced.

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TSVANG, R.L.

Medical science

UDC: 351.77

EFFECTIVENESS OF PUBLIC HEALTH MANAGEMENT DOCUMENTS

[Article by R.L. Tsvang, Candidate of Medical Sciences, All-Union Scientific-Research Institute of Social Hygiene and Public Health Organization [and N.A. Semashko] Moscow, Sovetskoye Zdravookhraneniye, Russian, No 1, 1973, submitted 19 July 1972, pp 29-34]

The term management documents refers to orders, decrees, directives, rulings, and instructions. An investigation of the effectiveness of such documents on the level of administrative management documents issued in the public health system are not always implemented only in part. As a result, the effectiveness of executive activity of management bodies does not reach its goal.

At the same time, in spite of the extremely great importance of this problem, the reasons for failure to implement management orders in the public health system have not been determined. Unjustifiably, this problem has not been given attention in either the legal or medical press. Yet, it is only if we know the reasons for failure to implement management documents that we can develop a means of eliminating them, thus improving the effectiveness of management.

We conducted a study in 1967-1971 in eight oblasts (Volgograd-skaya, Orlovskaya, Tambovskaya, Ulyanovskaya, Yaroslavskaya, Kostromskaya, Rostovskaya, and Vladimirskaya), one kray (Krasnoyarskiy), and nine municipal health departments. This meant that if, for example, an order was issued by the head of the oblast or kray health department, we studied its implementation on the scale of the oblast public health system. Implementation of an order issued by the head of a municipal health department was investigated on the scale of the municipal health system. We adhered to the same system in studying decisions (decree) of medical councils or oblast (kray) and municipal health departments.

Reported to the Republic Scientific Conference on Scientific Organization of Labor (Kishinev, May 1971) as well as to the Scientific and Practical Conference Dealing With Public Health Management (Mogilev, February 1971)

VINITI 55275 21 Jul 73

1/2 019 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--TWO LONG PERIODS IN UNORIENTED POLYETHYLENE -U-

AUTHOR--ALKSNE, K., GERASIMOV, V.I., TSVANKIN, D.YA.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(2) 139-42

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POLYETHYLENE, MACROMOLECULE, X RAY PHOTOGRAPHY, X RAY DIFFRACTION, POLYMER STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0225 STEP NO--UR/0460/70/012/002/0139/0142

CIRC ACCESSION NO--AP0106881
UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106881

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHANGES IN THE ORIENTATION OF HIGH D, POLYETHYLENE (I) MACROMOLS. AND THE TRANSFORMATION OCCURRING IN THE PERIODS L SUB1 AND L SUB2 (H. HENDUS, 1959) DURING DRAWING OF I SAMPLES WERE STUDIED BY X RAY DIFFRACTION PHOTOGRAPHY. THE NONORIENTED I SAMPLES AND 2 DIFFRACTIONALLY DIFFERENT SYSTEMS HAVING MUTUALLY PERPENDICULAR PERIODS. SINCE L SUB2 WAS GRADUALLY TRANSFORMED INTO THE USUAL LONG PERIOD LOCATED ON THE MERIDIAN OF THE X RAY FIBER DIAGRAM, THERE WAS NO TOTAL BREAKDOWN OF THE ORIGINAL STRUCTURE OR FORMATION OF A NEW ORIENTED SYSTEM OF FIBRILS DURING DEFORMATION. CONVERSELY, GRADUAL TRANSFORMATION OF L SUB2 SUGGESTED THAT ONLY A PARTIAL BREAKDOWN AND ORIENTATION OF STRUCTURAL ELEMENTS (WHICH ACCOUNTED FOR THE APPEARANCE OF THE PERIOD) HAD OCCURRED. DIFFRACTION EFFECTS (RELATED TO A CHANGE IN L SUB2) INDICATED THAT DRAWING OF NONORIENTED I SAMPLES WAS ACCOMPANIED BY STRAIGHTENING OF SPIRAL FIBRILS.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--X RAY DIFFRACTION STUDIES OF SECONDARY CRYSTALLIZATION IN A SERIES OF SILOXANE RUBBERS -U-

AUTHOR-(03)-MOSKALENKO, V.A., TSVANKIN, D.YA., GALILOGLY, F.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN. SER. A 1970, 12(3), 548-52

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--X RAY DIFFRACTION STUDY, CRYSTALLIZATION, SILOXANE, SYNTHETIC RUBBER/(U)SKTV POLYSILOXANE RUBBER, (U)SKT POLYSKLOXANE RUBBER, (U)SKTE POLYSILOXANE RUBBER, (U)SKTVF 803 POLYSILOXANE RUBBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1200 STEP NO--UR/0459/70/012/003/0548/0552

CIRC ACCESSION NO--AP0116665

UNCLASSIFIED

2/2 018 UNCLASSIFIED

CIRC ACCESSION NO--AP0116665 PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SECONDARY CRYSTN. OF 5 POLYSILOXANE RUBBERS, E.G. SKTV-1, SKTV, SKT, SKTE, AND SKTVF-803, WAS STUDIED BY AN X RAY DIFFRACTION MEHOD (V. A. MOSKALENKO, 1969). SECONDARY CRYSTNS. MAY BE EXPRESSED IN TERMS OF AVRAHMI'S EQUATION (HAVING N EQUAL 1). AT TEMPS. CORRESPONDING TO MAX. CRYSTN. RATE, PRIMARY AND SECONDARY CRYSTNS. OCCURRED SIMULTANEOUSLY, THE FORMER BEING COMPLETED IN 2-5 MIN. THE SECONDARY CRYSTN. RATE CONSTS. WERE EQUAL TO 0.2-0.6 HR.. PRIMEI. MAX. CRYSTALLINITY (SIMILAR TO 40-75PERCENTI WAS REACHED DURING A 1 DAY CRYSTN. OR SLIGHTLY LONGER. FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

2/2 033 UNCLASSIFIED PROCESSING DATE--04DEC7

CIRC ACCESSION NO--AP0136171

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SAMPLES OF BAKELITE (I) CONTG. VARIOUS AMTS. OF PHOH WERE PREPD. BY THE PURIFICATION OF COM. I. I WAS THEN PYROLYZED IN VACUUM OR IN AR AT TEMPS. LESS THAN OR EQUAL TO 1000DEGREES. ANAL. OF DTA DATA AND S RAY AND IR SPECTRA SHOW THAT THE MAIN REACTIONS WERE BREAKING CH SUB2 BRIDGES, DEHYDROGENATION, AND FREE RADICAL REACTIONS INVOLVING QUINONOID STRUCTURES. GAS CHROMATOG. AND MASS SPECTROSCOPY SHOWED THAT THE MAIN DECOMPN. PRODUCTS WERE PHOH, CRESOL, BENZENE, H SUB2, CH SUB4, CO, CO SUB2, AND H SUB2 O. THE CARBONIZED RESIDUE OBTAINED AT 900DEGREES HAD AN UNORGANIZED STRUCTURE. INCREASING THE PYROLYSIS TEMP. INCREASED THE NO. OF CONJUGATED STRUCTURES AND ORDERING. THE SAMPLES WITH LOWER INITIAL PHOH CONTENTS GAVE DENSER PYROLYZED STRUCTURES.

USSR

UDC 535.343

TSVELYKH, N. G., TSENDROVSKIY, V. A., (Kiev State University imeni T. G. Sevchenko)

"The Width of the Forbidden Zone and the Optical Properties of Thin Films of Gallium Phosphide"

Tomsk, Izvestiya VUZ Fizika (News of the Higher Educational Institutions, Physics), No 9(112), 1971, pp 88-92

Abstract: Vacuum-deposited gallium phosphide films (100-5000 Å thick) are studied to determine the temperature dependence of the width of the forbidden zone and the effects of film thickness. Dispersion is measured in the visible spectrum.

The substrates used were glass, quartz, and NaCl monocrystals. The optical width of the forbidden zone decreases with temperature. This effect is most pronounced for quartz and least for glass and is likely due to distortion of the film when the substrate expands with heat. The width increases with decrease in film thickness inversely as the square of the thickness. This

USSR

TSVELYKH, N. G. et al, Izvestiya VUZ Fizika, No 9(112), 1971, pp 88-92

is interpreted as a quantum dimensional effect. Curves are shown for the optical density of GaP films as a function of wavelength, the dependence of absorption on photon energy for different substrate temperatures, and the dispersion in the range of 4000 to 10,000 Å.

Orig. art. has 5 figs. and 13 refs.

2/2

USSR

UDC: 534.113:624.042.8

TSVENIASHVILI, D. Kh., KARAMYSHKIN, V. V., Moscow

"Dynamic Stability of Schematic Cantilever Under the Influence of a Tracking, Pulsating Load"

Kiev, Prikladnaya Mekhanika, Vol 6, No 11, 1970, pp 134-137

Abstract: The dynamic stability of a cantilever beam with a concentrated mass at the free end is studied under the influence of a tracking, harmonic load. The differential equation of motion considering the inertia of rotation of the load is solved by the method of expansion into trigonometric series. Expressions are produced for the construction of the areas of dynamic instability and it is demonstrated that the inertia of rotation of the load worsens the dynamic stability of the rod.

1/1

Oncology

USSR

UDC 576.5

LAGIDZE, R. M., LAGIDZE, D. R., TSVENIASHVILI, V. Sh., and KOPALADZE, R. A., Institute of Experimental and Clinical Surgery, Ministry of Health GSSR

"Half-Wave Potentials (φ 1/2) and Biological Activity of Some Antitumor Compounds"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 58, No 1, Apr 70, pp 217-220

Translation: Compounds which differ considerably in their chemical structure frequently exhibit similar physiological activity. This leads to the speculation that it might be possible to find some similarities in their ultrafine structures by means of modern physical methods. Wright and Sere have reported interesting facts on this type of relationship for a specific group of redolent substances. In this connection, we believe that various compounds with antitumor activity should also exhibit some common physical properties. Application of the results of spectroscopic studies, polarography, and other physical research methods, for this purpose may prove to be a promising lead in an approach to a more rational selection of new antitumor agents from among the tremendous number of organic compounds and natural products. However, it should be noted that, with the exception of systematic studies investigating the relationship between the hydrolysis rate of certain groups of alkylating compounds and their antitumor activity, no other physical

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LAGIDZE, R. M., et al., Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 58, No 1, Apr 70, pp 217-220

methods have been used for such purposes to any extent. All this also pertains to some extent to the polarographic studies of antitumor compounds.

Z. V. Pushkareva and her coworkers determined the half-wave potentials of a large group of nitrogen mustards with aliphatic, aromatic, and heterocyclic carriers. Having investigated the nature of the reduction and hydrolysis processes of these compounds, they proposed reaction mechanisms for their conversions. It was shown that the φ 1/2 of these compounds is constant in a wide range (from -0.97 to -1.42 volts with a saturated calomel reference electrode). A polarographic technique was also successfully used in a quantitative determination of ethylene immonium ions of N,N-di-(2-chloroethyl)-amines with aliphatic and aromatic groups.

We believe that valuable results could be obtained in this area from systematic studies of individual series of specific organic compounds, leading to elucidation of a relationship between their antitumor activity and minute structural changes and physical properties. It was shown in earlier studies that compounds of the 3-arylbutyl-N,N-di-(2-chloroethyl.)-amine type are well suited for such studies. As a result of biological studies of these compounds, it has been established that their antitumor activity depends substantially on the nature, number, and position of the substituents in the aromatic nucleus. In the present paper, we report the

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results of polarographic determinations of 3-arylbutyl-N,N-di-(2-chloroethyl)-amines and 3-arylbutyl-2-chloroethylsulfides obtained earlier by R. M. Lagidze and his coworkers.

All of these compounds exhibit proven antitumor activity. The polarograms were determined on the LP-60 polarograph. The potentials were measured with a saturated aqueous calomel reference electrode. The $\varphi_{1/2}$ values of these compounds are reported in a table. In contrast to the above compounds, 3-arylbutyl-2-chloroethyl sulfides are insoluble in water. Therefore their $\varphi_{1/2}$ were determined in dry dimethyl formamide against 0.1 M $LiClO_4$ and a 10^{-3} M concentration of the depolarizer. For comparison, the $\varphi_{1/2}$ values of 3-arylbutyl-N,N-di-(2-chloroethyl)-amines obtained by us were also determined in dimethylformamide under identical conditions. It was shown that replacement of dimethylformamide with water had no effect on the $\varphi_{1/2}$ value in this case.

Literature values of the $\varphi_{1/2}$ for various antitumor agents are reported. The $\varphi_{1/2}$ of 37 compounds studied by Z. V. Pushkareva and her coworkers are included. In spite of the small differences in the conditions under which the $\varphi_{1/2}$ values were determined by various investigators, including some variations in the pH of the media, the results are in agreement with each other and with data

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IAGIDZE, R. M., et al., Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 58, No 1, Apr 70, pp 217-220

obtained by us.

It is noteworthy that the $\varphi_{1/2}$ interval for these various classes of antitumor agents is quite narrow, even though some of them are quite different from the standpoint of both their structural relationship and the polarography of their active groups. Obviously it should not be concluded from this fact that all compounds with the halfwave potentials, in the reported region will have antitumor activity. Furthermore, in many cases, for example with steroid hormones, the antitumor activity relates closely to the hormonal activity. Nevertheless, it may be hoped that accumulation of a large amount of this type of experimental data, coupled with a thorough analysis of the data in relation to other physical properties, may generate a new complex of criteria for rational selection of new, effective antitumor agents.

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1/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--POLAROGRAPHIC BEHAVIOR OF GALLIUM, III, IN A NONAQUEOUS MEDIUM -U-

AUTHOR-(03)-GAPRINDASHVILI, V.N., GVINEPADZE, D.S., TSVENIASHVILI, V.SH.

COUNTRY OF INFO--USSR

SOURCE--SOOBSHCH. AKAD. NAUK GRUZ. SSR 1970, 57(1), 85-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GALLIUM ELECTROLYTE, POLAROGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1398 STEP NO--UR/0251/70/057/001/0085/0088

CIRC ACCESSION NO--AP0126936

UNCLASSIFIED

2/2 006 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126936

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REDN. OF GA WAS STUDIED IN ITS HCONME SUB2 SOLNS. WITH LICLO SUB4, ME SUB4 NI, AND PHME SUB3 NI AS AUXILIARY ELECTROLYTES. AT 10 PRIME NEGATIVE4 -5 TIMES 10 PRIME NEGATIVE3 M GA, THE HEIGHT OF THE REDN. WAVE WAS DIRECTLY PROPORTIONAL TO THE GA CONCN. THE HALF WAVE POTENTIAL WAS NOT AFFECTED BY THE CONCN. BUT WAS AFFECTED BY THE NATURE OF THE IONS OF THE AUXILIARY ELECTROLYTES. AT A GA CONCN. OF 10 PRIME NEGATIVE3 M, THE HALF WAVE POTENTIAL WAS 1.12 V. THE EFFECT OF TEMP. ON THE LIMITING CURRENT AT 20-70DEGREES WAS PLUS 1.4PERCENT-DEGREE. THE REDN. OF GA IN HCONME SUB2 WAS A 1-STEP PROCESS ACCORDING TO: GA PRIME3 POSITIVE PLUS 3E YEILDS GA.

FACILITY: INST. NEORG. KHIM. ELEKTROKHIM., TBILISI, USSR.

UNCLASSIFIED

Acc. Nr: AP0034211 Abstracting Service: CHEMICAL ABST. 4-7° Ref. Code: UR 0078

71108p Effect of background cations on the rate of activation of iridium(III) hexachloride complexes. Kravtsov, V. I.; Tsventarnyi, E. G.; Tsavun, G. P.; Yusupova, V. A. (Leningrad. Gos. Univ., Leningrad, USSR). *Zh. Neorg. Khim.* 1970, 15(1), 81–3 (Russ). Rate const. (k) of $IrCl_6^{3-}$ aquation was detd. in 0.1, 1, and 3M solns. of LiCl and NaCl and in 0.1M KCl at 25–60° and at pH 3. At const. alkali chloride concn., k decreased with cations in the order Li > Na > K. It decreased also with increasing LiCl or NaCl concn. Apparently, alkali cations affect the orientation of water mols. around $IrCl_6^{3-}$. For 0.1M LiCl, NaCl, and KCl, the activation energy of $IrCl_6^{3-}$ aquation is 25.3, 26.5, and 26.9 kcal/mole, resp. The activation energy decreased with increasing alkali chloride concn.

HMJR

REEL/FRAME
19710864

TSVERAVA, V. G.

UDC 551.576.4

SOME CHARACTERISTIC FEATURES OF THE DYNAMICS OF THE LOWER LEVEL LOWER CLOUD BOUNDARY

[Article by Candidate of Geographic Sciences V. G. Tsverava, Institute of Experimental Meteorology; Moscow, Meteorologiya i Gidrologiya, Russian, No 3, 1972, submitted 25 February 1971, pp 110-113]

The set of experimental altitude distributions of the lower cloud boundary constructed for each minute of a half-hour interval is analyzed. Each distribution in the set was obtained by the data from 106 statistical independent observations.

It was demonstrated that the nature of the distribution of the recurrence rates in the set depends on time and that for 3-4 minutes from the origin of the coordinates the probabilities of the lower cloud boundary getting into the layers of equal thickness located above or below the mean cloud altitude are approximately identical.

For the cloudiness of the lower level, quite frequent and significant variations of its lower boundary with respect to magnitude are characteristic. In reference [1] it is noted that in a number of cases the altitude of the lower cloud boundary can vary in 1-5 minutes by 150-200 meters.

The behavior of the lower cloud boundary depends on an entire set of mutually conditioned and different processes with respect to scale. Therefore, the problem of forecasting the altitude of the lower cloud boundary is one of the most difficult forms of forecasting, especially if we are talking about forecasting for a period of less than 1 hour. At this time, it is recommended that the cloud altitude which will occur at a given point in 30-40 minutes be determined by linear extrapolation of the preceding behavior of the altitude of the lower cloud boundary [1]. Refinement of this method requires knowledge of a number of probability characteristics of clouds.

The simplest characteristic of the dynamics of the altitude of the lower cloud boundary is the probability of its being above or below the given limit which is determined by the empirical distribution functions. Frequently, the

Received 5 May 72

USSR

UDC 681.327.2

TSVETAYE, V. K.P., ANTONOV, V. N., KONDRAT'YEV, P. P., SHISHKIN, A. M., and FUFLYGIN, G. I., Moscow Power Institute

"Recording Device"

USSR Author's Certificate No 372557, kl G 06 f 3/14, filed 4 Jul 69, published 25 Apr 73 (from RZh Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 73, abstract No 11, A431P)

Translation: A device is proposed for recording, containing the following units arranged sequentially along one optical axis: a light source, system of controlling the light beam containing sequentially arranged polarizers, crystal blocks with controllable planes of polarization and an analyzer, an optical system, and an information carrier. To improve the speed, the crystals of the light beam control system contain openings corresponding to the shapes of the symbols to be recorded. Two illustrations.

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USSR

UDC: 681.327.12

TSVETAYEV, K. P. and NOGTIKOV, A. N.

"Device for Counting and Recognizing Symbols"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 34, December 1971, p 151

Abstract: This invention contains a radiation source, an information carrier, and a receiver arranged in sequence along the optical axis and connected with a recognition block which, in turn, is connected to a coding and control block. To increase the speed of the device, a diaphragm block is added; it is connected to the recognition block output and placed between the information carrier and receiver. The diaphragm block contains a polarizer of potassium dihydrophosphate crystals and an optically connected analyzer. The recognition block contained switches which are used for selecting symbol groups through logic circuits.

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Acc. Nr. AP0045431 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code UR 0068

91290v Ash-containing styrene–indene resin–softener for reclaiming rubber. Andreeva, V. A.; Tsvetaeva, E. M. (USSR). *Koks Khim.* 1970, (1), 40–2 (Russ). Styrene–indene resins (I) contg. ~3% ash (mostly Na_2SO_4), petroleum byproducts used mostly as thermal plant fuels, were used for rubber reclamation. In reclaiming tire rubber, 100 wt. parts rubber is 1st mixed with 35–7 parts softener (normally a mixt. of pyrolysis wood tar and heavy petroleum oil), heated at 180–5°, and rolled. The replacement of the std. softener with I gave reclaimed rubber of lowered tensile strength at break (σ) and elongation at break (ϵ). However, when the std. softener was replaced with a 1:1 I–shale oil mixt. contg. 1% AcOH the reclaimed rubber vulcanizates contg. this softener had σ = 68 kg/cm² and ϵ = 512% compared to σ = 66 kg/cm² and ϵ = 460% using std. softeners. In both cases the rubber stock used consisted of butadiene–styrene copolymer contg. ~8% rayon fibers. CPJR

REEL/FRAME
19780376

1/3 - 015 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--SYNTHESES BASED ON TETRAMETHYLOLPHOSPHONIUM CHLORIDE. SOME TRANSFORMATIONS OF TRIS(CHLOROMETHYL)PHOSPHINE AND

AUTHOR-(05)-TSVETKOV, YE.N., BORISOV, G., SIVRIYEV, KH., MALEYANNAYA, R.A., KABACHNIK, M.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2) 285-91

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, ORGANIC PHOSPHORUS COMPOUND, CHLORINATED ORGANIC COMPOUND, THIOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1397 STEP NO--UR/0079/70/040/002/0285/0291

CIRC ACCESSION NO--AP0101489

UNCLASSIFIED

2/3 : 015 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0101489

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDN. OF 350 G (HOCH SUB2) SUB4 PCL TO 1680 G PCL SUB5 IN 2 L. CCL SUB4 AT REFLUX AND HEATING 4 HR GAVE 97PERCENT (CLCH SUB2)SUB4 PCL (I), M. 198 TO 9DEGREES. I (200 G) TREATED WITH 60.7 G NAOH IN 300 ML H SUB2 O AT 10 TO 15DEGREES IN 400 ML H SUB2 O TO 400 ML CHCL SUB3 UNTIL ALK. TO PHENOLPHTHALEIN, GAVE 81.5PERCENT (CLCH SUB2) SUB3 P (II), B SUB2 56 TO 7DEGREES, D PRIME20 2.4204, N PRIME20 D 1.5530, WHICH ON STANDING DEPOSITED A FLAKY COLORLESS SOLID OF UNDETD. COMPN.; DURING EVAPN. OF THE SOLVENT FROM II THE TEMP. MUST BE HELD UNDER 90DEGREES AS EXPLOSIONS OCCURED AT 100DEGREES OR HIGHER. II AND 24PERCENT NAOH AT 10 TO 20DEGREES THEN AT REFLUX 3 HR UNTIL HOMOGENEOUS GAVE MEP(O)(CH SUB2 CL) SUB2 (III), B SUB7 149 TO 50DEGREES, M. 49 TO 50 DEGREES. III ALSO FORMED AFTER SIMILAR HEATING OF II WITH H SUB2 O ALONE. HEATED WITH NAOAC ACOH 6 HR AT 200DEGREES III GAVE THE DIACETATE, B SUB5 163 TO 4DEGREES, 1.2326, 1.4670. ALSO PREPD. FROM II AND ACOH ACONA 10 HR AT 150DEGREES. HEATING II WITH ETSH ETSNA 9 HR AT 130DEGREES IN ET SUB2 O IN AN AUTOCLAVE GAVE 84PERCENT (ETSCH SUB2) SUB3 P, B SUB2 137 TO 8DEGREES, 1.0749, 1.5665. MEP(O) (CH SUB2 CL)SUB2 (IV) AND ET SUB2 NH IN 15 HR AT 125DEGREES GAVE 49PERCENT MEP(O)(CH SUB2 NET SUB2) SUB2, B SUB2 TIMES SUB5 118 TO 19DEGREES, 0.9391, 1.4681.

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3/3 015 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0101489

ABSTRACT/EXTRACT--HEATING 3 G IV AND 10 G PH SUB3 P IN ME SUB2 NCHO 12 HR AT 150 TO 60DEGREES GAVE ON ADDN. OF ME SUB2 CO 67.5PERCENT (PH SUB3 PCH SUB2)SUB2 P(O)ME PRIME POSITIVE PRIME POSITIVE2 CL PRIME NEGATIVE, M. 300 TO 1.5DEGREES. IV (4G) IN MEPH AND A REACTION PRODUCT OF 1.37 G NA AND 10 ML MEOCH SUB2 CH SUB2 OH IN MEPH GAVE IN 6 HR REFLUXING 53.5PERCENT MEP(O)(CH SUB2 OCH SUB2 CH SUB2 OME) SUB2 B SUB5 185 TO 6DEGREES, 1.1117, 1.4625. SIMILARLY WAS PREPD. 52PERCENT MEP (O) (CH SUB2 OCH SUB2 CH SUB2 OBU) SUB2, B SUB5 210 TO 11.5DEGREES, 1.0082, 1.4547. PHONA SIMILARLY GAVE 83PERCENT MEP(O)(CH SUB2 OPH) SUB2, M. 96 TO 7 DEGREES. SIMILARLY WAS PREPD. 80PERCENT P TOLYL ANALOG, M. 122 TO 4DEGREES; 79PERCENT P NITROPHENYL ANALOG, M. 169 TO 70DEGREES; M NITROPHENYL ANALOG, M. 90 TO 1DEGREES; P CARBO METHOXPHENYL ANALOG, M. 133 TO 5DEGREES; P CARBONYPHENYL ANALOG, M. 295 TO 6DEGREES; M ISOMER, M. 142 TO 3 DEGREES.

UNCLASSIFIED

USSR

UDC 546.791.6.161

TSVETKOV, A. A., SELEZNEV, V. P., SUDARIKOV, B. N., GROMOV, B. V., Moscow Institute of Chemical Technology imeni D. I. Mendeleyev

"Basic Uranyl Fluorides"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol XVIII, No 1, 1973, pp 12-15

Abstract: The possibility of the formation of the basic salt of uranyl fluoride was demonstrated by Marshall, et al. [J. Amer. Chem. Soc., No 76, 4279, 1954] when studying the phase diagram of the uranyl fluoride and water systems. Yu. A. Buslayev, et al. [Dokl. AN SSSR, No 148, 832, 1963] detected the existence of hydrated hydroxofluorouranyl which precipitates as the equilibrium bottom phase in the range of 0.59-8.39% by mass of HF. In the present work, the differential thermal analysis method was used in combination with chemical and x-ray phase analysis to demonstrate the existence of two separate hydrates of the basic salts of variable composition in the UO_3-HF-H_2O system: 1) $UO_2(OH)_xF_{2-x}\cdot 2H_2O$ and $UO_2(OH)_xF_{2-x}\cdot H_2O$ where x = 0.3-1.2. A study was made of the structure of the salts, and some of their thermodynamic characteristics were determined. The thermogravimetric curve of the decomposition of $UO_2(OH)_xF_{2-x}\cdot 2H_2O$ and tabulated data for the analysis of the basic salts of uranyl fluoride are presented. The heats of formation and the isobaric-isothermal potentials of the formation of the basic salts of uranyl fluoride and their errors are also calculated.

USSR

UDC 546.791.6'161-31'

TSVETKOV, A. A., SELEZNEV, V. P., SUDARIKOV, B. N., GROMOV, B. V., and PEGANOV, V. A., Moscow Chemical-Technological Institute imeni D. I. Mendeleyev

"Complex Compounds of Uranyl Fluoride With Water and Hydrogen Fluoride"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 16, No 3, Mar 71, pp 768-771

Abstract: Three complex uranyl fluoride compounds were isolated in the system UO_2F_2-HF-H_2O: $H_2[UO_2F_4]\cdot 4\ H_2O$, $H[UO_2F_3]\cdot 2\ H_2O$, and $H[(UO_2)_2F_5]\cdot 4\ H_2O$. All of these materials form salts with alkali metals and ammonia; their structures were studied. Thermodynamical properties of these compounds were determined by means of differential thermal analysis.

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USSR

UDC 621.396.6-181.48

PARECHIN, V. I., TSVETKOV, A. F.

"Synthesis of Tolerances in Hybrid Film Microcircuits"

V sb. Metody mat. i fiz. modelir. i optimiz. parametrov radioelektron. apparatury. No 1 (Methods of Mathematical and Physical Simulation and Optimization of the Parameters of Radio Electronic Equipment. No 1 -- collection of works), Moscow, 1972, pp 41-42 (from RZh-Radiotekhnika, No 7, Jul 72, Abstract No 7V253)

Translation: The combined method of synthesizing tolerances using iteration calculations for applying additional relations to the parameters is discussed briefly. The solution of the problem is simplified as a result of the presence of strong correlations between the parameters of the elements. This permits designation of identical tolerances for such elements. The tolerances on the groups of parameters are selected as a function of their partial effect on the output parameter. The problem of synthesis of the tolerances on the tuned elements is solved by recalculating the generalized influence coefficient and by the iteration method.

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USSR UDC: 621.396.96.01

TSVETKOV, A. G.

"Principles of Quantitative Evaluation of the Effectiveness of Electronic Radio Facilities"

Printsipy kolichestvennoy otsenki effektivnosti radioelektronnykh sredstv (cf English above), Moscow, "Sov. radio", 1971, 201 pp, ill. 63 k. (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G4 K)

Translation: The book presents the principles of quantitative evaluation of the effectiveness of electronic radio facilities. The basic indices used as criteria in evaluating their effectiveness are considered. Relationships for determining these indices are presented as applied to certain types of radio facilities. Considerable attention is given to problems of evaluating the effectiveness of electronic radio facilities with regard to their actual reliability and possible counteraction. The book is written for specialists working in the areas of design and use of these facilities. Twenty illustrations, three tables, bibliography of nineteen titles. Annotation.

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UDC 621.771.064

USSR

NIKITIN, G. S., ZHUCHIN, V. N., KAPUSTIN, V. A., YEVSTROPOV, G. M., and TSVETKOV, A. I., Moscow Higher Technical School imeni Bauman, and the "Elektrostal'" Plant

"Rolling Deformation-Resistant Steels and Alloys in a Planetary Mill"

Moscow, Stal', No 2, Feb 71, pp 142-144

Abstract: This paper describes planetary mills which are now being combined with ingot-producing mills for continuous and integrated casting and rolling processes. The input to the planetary mill, used for the rolling part of the combined operation, can be fed in a continuous ingot from the crystallizer at the rate of 2.0-3.5 meters per minute. Among other advantages, the planetary mill can be fully automated, requiring no complex control system for regulating the production rate, and can be used for rolling deformation-resistant steels in a narrow temperature interval. Several of these mills are in operation in foreign countries but are used only for rolling. In the VNIIMETMASH (All-Union Scientific Research and Planning Design Institute of Metallurgical Machine Building)
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NIKITIN, G. S., et al, Stal', No 2, Feb 71, pp 142-144

a basically new planetary mill has been developed in which the metal is compressed from four sides. Known as the Tselikov-Nosal' system, the machine can result in substantial economies.

USSR

TSVETKOV, D., and POPOV, T.

"The Effect of High Frequency General Vibration on the Activity of Some Enzymes Participating in Biological Oxidation -- in the Experiment With Cytochromoxidase, Catalase, Peroxidase"

Zh. Gigiyeny, Epidemiol., Mikrobiol., i Immunol. (J. of Hygiene, Epidemiology, Microbiology and Immunology), 1973, Vol 17, No 2, pp 157-162 (from RZh - Biologicheskaya Khimiya, No 22, Nov 73, Abstract No 1412)

Translation: The effect of general high frequency vibrations (150 hc) on cytochromoxidase, peroxidase, and catalase in liver and blood has been studied in experiments on rats. It has been established that as a result of the action of the vibration for 1 hr per day for 45 days, the activity of the above enzymes undergoes an early change -- at 15 to 30 day, the changes being unstable, exhibiting a tendency to return to normal even with prolonged exposure. The observed changes in the enzyme activity indicate some acceleration in biooxidation.

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USSR

UDC 621.317.757

RYZHOV, V. P., CHERNYSHEV, V. M., and TSVETKOV, E. A.

"Analysis of the Spectra of Signals With Respect to Khaar's Functions"

Tr. Taganrog. radiotekhn. in-ta (Works of the Taganrog Radio-Engineering Institute), 1972, vyp.28, pp 15-21 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 A286)

Translation: The authors note the advantages of the orthogonal expansion of signals which are realized by a unit based on pulse technology elements, for example according to Khaar's functions, in comparison to the known orthogonal expansions according to the functions of Laguerre, Legendre, and Bessel. It is shown that the technique for the realization of orthogonal analyzers operating according to Khaar's functions is accomplished on the basis of electronic keys which are controlled by rectangular voltages. The use of high-speed, pulsed units and careful execution of electronic keys, integrators, and readout circuit makes it possible to obtain an error which has been brought close to that of the value for the maximum coefficient of expansion and does not exceed a percentage fraction in the frequency range up to hundreds of kilocycles. The possibility of electronic retuning of the studied analyzers makes it possible to utilize them in the production of adaptive systems for measurement, control, and automatic control. A.K.

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USSR

TSVETKOV, E. I.

"Unstable Random Processes and Their Analysis"

Nestatsionarnyye Sluchaynyye Protsessy i Ikh Analiz. [English Version Above], Moscow, Energiya Press, 1973, 129 pages (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V222K, from the Annotation).

Translation: This book presents a systematic analysis of the principle properties of unstable random processes and methods of measurement of thier probabilistic characteristics. The greatest attention is given to analysis of operators for estimation of the probabilistic characteristics and structural plans of devices performing these operations. The methodological errors in measurement and their relationship to the type of process, type of characteristic measured and type of operator are studied.

The book is designed for specialists working in the area of electrical measurements, electronic measurements, communications, statistical electronic engineering, automation, meteorology, analysis of microstructures and other areas related to studies of unstable random processes.

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USSR UDC 519.24

TSVETKOV, E. I.

"Correlation Analysis of Unstable Random Processes"

Metody Predstavleniya i Apparaturn. Analiz Sluchayn. Protsessov i Poley. 3-y Vses. Simpozium. Sekts. 1 [Method of Representation and Hardware Analysis of Random Processes and Fields, Third All-Union Symposium, Section 1 -- Collection of Works], Leningrad, 1970, pp 3-13, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V200 by V. Noskov).

Translation: This review article is dedicated to methods of production of estimates of correlation functions of unstable random processes. Let x_i (i = 1, 2, ..., N) be the centered realizations of random processes. Three types of estimates are discussed:

1) t-current $$R_x^*(t,\tau)=\frac{1}{N}\sum_{i=1}^{N} x_i(t)\,x_i(t-\tau)\,dt,$$

2) k-current $$R_x^*(k,\tau)=\frac{1}{T}\int_{\tau}^{T+\tau} x_k(t)\,x_k(t-\tau)\,dt,$$

3) mean $$R_x^*(\tau)=\frac{1}{NT}\int_{\tau}^{T+\tau}\sum_{i=1}^{N} x_i(t)\,x_i(t-\tau)\,dt.$$

The problem of introducing weight functions to operators 1 and 2, allowing the measurement error to be decreased is studied. Various generalizations of the concept of the correlation interval to cover cases of unstable processes are

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UDC 519.24

USSR

Metody Predstavleniya i Apparatura. Analiz Sluchayn. Protsessov i Poley. 3-y Vses. Simpozium. Sekts. 1, Leningrad, 1970, pp 3-13.

discussed. The class of random processes with stable increments and locally stable processes introduced by Silverman, characterized by the fact that the t-current correlation function is $R_x(t, \tau)=R_x\left(t-\frac{\tau}{2}, 0\right)\rho_x(\tau)$ are analyzed. It is demonstrated that processes of this type with normal distribution can be modeled by the standard method. 18 Biblio. Refs.

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UDC: 621.391.8:519.27

USSR

TSVETKOV, E. I.

"Problems of Measuring the Statistical Characteristics of Random Processes"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 3 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 3), Novosibirsk, 1970, pp 67-69 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A56)

Translation: The author discusses the principles of measuring the statistical characteristics of random processes as applied to two problems -- measurements involved in investigating the properties of an object for purposes of developing a model of that object, and measurements necessary for solving technical problems (process control, signal detection against a background of noise, etc.). The most pressing problems in both areas are discussed. It is noted that the present state of development in these areas is inadequate, and that new ways must be found to solve the problems involved. N. B.

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UNCLASSIFIED PROCESSING DATE--11SEP70

1/2 038

TITLE--POLYMERS PREPARED FROM BIS(4,CARBOXYPHENOXYMETHYL)(METHYL)PHOSPHINE OXIDE -U-

AUTHOR--BORISOV, G., SIVRIEV, KHR., TSVETKOV, E.N., KABACHNIK, M.I.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(3) 620-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--POLYMER, ESTERIFICATION, ORGANIC PHOSPHORUS COMPOUND, CARBOXYL RADICAL, BENZENE DERIVATIVE, POLYESTER RESIN, PHTHALATE, THERMAL STABILITY, ADHESION, METAL TO NONMETAL BONDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0242 STEP NO--UR/0459/70/012/003/0620/0625

CIRC ACCESSION NO--AP0106898

UNCLASSIFIED

2/2 038 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106898

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TRANSESTERIFICATION OF (4-MEO SUB2 CC SUB6 H SUB4 OCH SUB2) SUB2 P(O)ME (I) WITH HOROH (R IS (CH SUB2) SUB2, CH SUB2 CHME, (CH SUB2) SUB4, (CH SUB2) SUB5, (CH SUB2) SUB6, OR (CH SUB2 CH SUB2) SUB2 O) IN THE PRESENCE OF (ACO) SUB2 ZN AS THE CATALYST GAVE 87-90PERCENT POLYESTERS (II). SIMILARLY THE TRANSESTERIFICATION OF I,DI,ME TEREPHYHALATE MIXT. WITH HOROH GAVE A MIXT. OF II, CORRESPONDING POLYTEREPHTHALATES (III), AND COPOLYMERS. THE SOLY. OF II AND III IN CHCL SUB3 DIFFERS CONSIDERABLY, ENABLING SEPN. TURBIDIMETRIC TITRN. OF THE HOMOPOLYESTERS,COPOLYMER MIXTS., USING TETRACHLOROETHANE AS THE SOLVENT AND MEOH AS THE PRECIPITANT, DEMONSTRATED THE EXISTENCE OF THE COPOLYMER. THE COPOLYMER M.P. DECREASES WITH THE INCREASE CONTENT. THE THERMAL STABILITY OF II IS SUPERIOR TO THAT OF III; AT 300DEGREES IN THE AIR II LOSE 4-52PERCENT WT. IN 3 HR. II ARE SEMI TRANSPARENT; THEIR MELTS CAN BE DRAWN INTO FIBERS AND FORMED INTO FILMS. THE COPOLYMERS CONTG. LARGER THAN 20PERCENT I UNITS LOSE 4-5PERCENT WT. AT 300DEGREES IN THE AIR DURING 3 HR. THEIR ADHESION TO STEEL INCREASES TO 84 KG-CM PRIME2 WITH INCREASING I UNIT CONTENT.

UNCLASSIFIED

USSR

UDC 533.697

TSVETKOV, F. F., KERIMOV, R. V.

"Results of Measurements of Hydraulic Resistance in the Motion of Dusty Air in Tubes"

Tr. Mosk. enegr. in-ta (Works of Moscow Power Engineering Institute), 1971, No. 81, pp 27-32 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9B327)

Translation: The resistance in the ascending motion of a suspension of graphite particles of diameter 230 μ was studied experimentally in a tube of diameter 18.8 mm over a segment of length 1880 mm. The resistance was determined by measuring the pressure drops over the length of this segment. The flow rate of the air varied from 4.9 to 20 m/sec and the Reynolds number varied from $6.5 \cdot 10^3$ to $32 \cdot 10^3$. The mass emission concentration K varied from 1 to 15. Almost linear relationships $\Delta p/\Delta p_0(K)$ were obtained, the slope of which drops considerably with the rise in Reynolds number. The effect of the Reynolds number is explained on the basis of a measurement with the aid of a specially developed photoelectric system of the velocity of the front of the particles suspended in the ascending gas flow. A. S. Malyutin.

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USSR

UDC 533.69.01+533.662.013

TSVETKOV, L. G.

"Approximation Method for Calculating Aerodynamic Load Over a Low-Flying Wing With a Fuselage"

Tr. Leningr. korablestroit. in-ta (Works of Leningrad Shipbuilding Institute), 1970, No. 69, pp 111-121 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9B240)

Translation: A technique is proposed for the numerical calculation of the aerodynamic load distribution over a wing under uniform motion of a wing with an angle of sweepback and an angle of heel and with a fuselage in the form of an infinite circular cylinder and a zero angle of attack over a solid screen. The wing is modeled by a system of discrete oblique horseshoe-shaped vortices. Calculations of the rectangular wing with an aspect ratio $\lambda = 2$ without an angle of heel and with a fuselage of the midwing monoplane design were made by this method on the "Minsk-1" computer, varying the radius of the cylinder and the distance of the axis of the fuselage from the screen. A scheme with 18 vortices was selected. The calculations showed that the fuselage has a considerable effect on the distribution of aerodynamic load along the wing. This effect was especially great in the motion of the system close to a solid screen. A. V. Krasil'nikov.

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1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THERMAL CONDUCTIVITY OF SUPERHEATED VAPORS OF METHANE SERIES FREONS -U-

AUTHOR--TSVETKOV, O.B.

COUNTRY OF INFO--USSR

SOURCE--KHOLOD. TEKH. 1970, 46(12), 21-4

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--METHANE, FREON, THERMAL CONDUCTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0541 STEP NO--UR/0066/70/046/012/0021/0024

CIRC ACCESSION NO--AP0119460

UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119460

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL COND. COEFF. (LAMBDA) OF VAPOR STATE FREON 12 (I) WAS DETD. AT 0-120DEGREES AND COMPARED WITH REPORTED RESULTS. THE VALUES OF L (A TERM CHARACTERIZING THE TRANSFER OF MOL. INTERNAL ENERGY), Z SUBROT (A COLLISION NO. FOR ROTATIONAL RELAXATION), AND A COEFF. DEFINED IN RELATION TO MOL. WT., THE VISCOSITY COEFF., AND THE MOLAR HEAT ARE TABULATED FOR I AND FREONS 11 (II), 13 (III), AND 14 (IV). THE L VALUE DEPENDS ON TEMP. ONLY SLIGHTLY (THE TEMP. RANGES INVESTIGATED FOR II, III, AND IV WERE 300-450, 200-350, AND 150-300DEGREESK, RESP.) AND HAS NEARLY THE SAME VALUE FOR ALL THE FREONS. THE Z SUBROT VALUE INCREASED WITH TEMP. THE COEFF. CHANGED FOR EACH OF THE FREONS IN THE TEMP. RANGES INVESTIGATED BY SEVERAL PERCENT AND INCREASED WITH DECREASING MOL. WT. TO GIVE A SMOOTH CURVE.

FACILITY: LENINGRAD. TEKHNOL. INST. KHOLOD. PROM., LENINGRAD, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--SYNTHESIS OF ALKYLSALICYLATE ADDITIVES BASED ON P,CRESOL -U-

AUTHOR-(05)-MONASTYRSKIY, V.N., TSVETKOV, O.N., DMITRIYEVA, N.A., KAZAKOV, YE.I., KUMENEV, K.D.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), 17-19

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--SALICYLATE, ALKYLATION, CRESOL, PETROLEUM FRACTION, CHEMICAL SYNTHESIS, ANTIOXIDANT ADDITIVE, DETERGENT ADDITIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1491 STEP NO--UR/0065/70/015/003/0017/0019

CIRC ACCESSION NO--AP0112485

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112485

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADDITIVES, IMPARTING HIGH DETERGENT, ANTIOXIDANT, AND ANTISCALING PROPERTIES TO OILS, WERE PREPD. BY ALKYLATING P,CRESOL WITH AN OLEFIN FRACTION B. 240-320DEGREES, OBTIANED BY WAX CRACKING, YIELDING 63.6PERCENT ALKYL,P,CRESOL. THE LATTER WAS CARBOXYLATED TO OBTAIN THE ALKYLSALICYLIC ACID, WHICH WAS TREATED WITH CA(OH) SUB2 TO GIVE THE ADDITIVE.

UNCLASSIFIED

USSR

TSVETKOV, V., Deputy Chief, Computing Center of the Statistical Administration, Moscow

"On Programming Systems for 'Minsk'-Type Computers"

Moscow, Vestnik Statistiki, No 12, Dec 71, pp 42-45

Abstract: The paper reviews various operational systems for controlling statistical data processing on the "Minsk" computer series by a systems approach. The ISE-2 economy integrating system is used with the Minsk-22 computer with subprograms for input, checking, packaging, sorting, punch-card output, wide-tape printout, etc. Operation of the program is directed by the "Dispatcher" controlling program. The SSK symbolic coding system is a further development of the process of automating passage of a problem through the computer. This system functions on several stages: programming, keypunching, translation, debugging, and calculation. The SAOD automatic data processing system based on COBOL is used for automating the programming of problems in analysis of economic information. The IFVE-68 monitoring system is employed for automating manual work in pro-

USSR

TSVETKOV, V., Vestnik Statistiki, No 12, Dec 71, pp 42-45

gramming work in FORTRAN. This is a standardized set of programs. Core memory resident routines in the Minsk line are: 1) minimization of operator actions at the control panel; 2) program translation and detection of errors in the programs; 3) analysis of the causes for failures in the computer system; 4) organization of non-stop operation of the computer in the "Automatic" mode; 5) execution of a number of secretary functions. A brief description of the Minsk-32 computer system is given. This is the latest addition to the "Minsk" line. The software of the new system is compatible with the "Minsk-22" and the "Minsk-22M" systems. Some of the problems which must be solved for further development of operational systems are discussed.

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USSR

UDC 621.391

GORODNICHIN, N. T., ZAGRASNYANYY, F. D., KOTOV, P. A., METAL'NIKOV, N. I., TSVETKOV, V. A.

"A Device for Forming an 'Interrogate' Signal in Nonredundant Code"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, 1970, p 31, patent No 262153, filed 6 May 68

Abstract: This Author's Certificate introduces a device for forming an "interrogate" signal in nonredundant code in discrete data transmission systems with resolving feedback. The device contains a switching unit, two flip-flops, a frequency-halving divider, a frequency divider for division by seven, a memory cell, an error detection unit and an output transmitter relay. As a distinguishing feature of the patent, high reliability is assured in reception by connecting the outputs of the frequency-halving divider to the two inputs of the first flip-flop, connecting the outputs of the first flip-flop to the inputs of the output transmitter relay, and connecting the output of the transmitter relay to the input of the switching unit. The first output of the frequency divider for division by seven, which corresponds to the first cycle, is connected to the first input of the second flip-flop, while the second output, which corresponds to the third cycle, is connected to the input of the memory cell. The second input of the memory cell is connected to the output of the error detection unit, and the output

USSR

GORODNICHIN, N. T., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, 1970, p 31, patent No 262153, filed 6 May 68

is connected to the second input of the second flip-flop. The first and second outputs of the second flip-flop are connected to the inputs of the switching unit.

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USSR

TSVETKOV, V. D.

"Structure and Processes of Functioning of Self-Organizing Automatic Planning Systems"

Vychisl. Tekhn. v Mashinostr. Nauch.-Tekhn. Sb. [Computer Equipment in Machine Building Scientific and Technical Collection], June 1972, pp 62-72 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V718).

Translation: Problems of automatic planning of complex products and technological processes are studied. Models of multilevel processes for planning with heuristic criteria for self-selection of efficient decisions at each level are developed. An iterative algorithm for planning is described, allowing successive improvement of the initial version to the required stage of perfection.

Author's view

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TSVETKOV, V.D.

UNCLASSIFIED

SECTION III SO: SELECTED AEROSPACE MEDICAL FACILITIES

PCS-89
SEPT 71

Biophysics

Name: Institute of Biophysics, Pushchino

Description:

(U) During this quarterly reporting period, 25 new articles were identified from the Institute of Biophysics, Pushchino. On the basis of these articles, it was possible to identify 32 new personalities with the institute. These personalities, the subjects of the articles, and the dates are given below:

All-biophysics/physiology

Aliyeva, S. A.	phosphorylation	1971 (34)
Apikayeva, G. F.	radiation effect	1970 (35)
Aripova, D. F.	radiation effect	1971 (36)
Akhipa, Ya. I.	hypoxia	1969 (37)
Bregadze, I. F.	radiation effect	1970 [illegible]
Busel, Ye. P.	luminescence	1970 (38)
Dmitriyeva, T. I.	radiation effect	1970 (39)
Dmitriyeva, V. A.	blood plasma	1969 (40)
Domareva, O. P.	radiation effect	1970 (39)
Dubrov, A. P.	biochemical analysis	1971 (41)
Gabalova, N. A.	muscle physiology	1971 (42)
Gannasi, Ye. E.	radiation effect	1970 (35)
Ivkova, M. N.	serum albumin	1971 (43)
Kanatkin, V. S.	phosphorylation	1971 (34)
Khokhlova, G. K.	muscle physiology	1971 (44)
Kiselov, A. N.	salivary gland	1970 (45)
Klyagina, V. P.	oligonucleotide	1970 (46)
Korol, B. A.	radiation effect	1971 (44)
Kocheleva, G. N.	biochemical analysis	1972 (41)

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Kuzina, S. V.	tissue culture	1970 (47)
Maskovich, D. S.	lactate dehydrogenase	1971 (48)
Medvedeva, I. F.	radiation effect	1971 (44)
Peshkova, L. V.	phosphorylation	1971 (49)
Pronevich, L. A.	antibiotic	1970 (50)
Rodionova, M. A.	mitochondrion	1971 (51)
Shchipatin, V. N.	phosphorylation	1971 (49)
Skobeyev, Ye. N.	radiation/vibration	1970 (52)
[illegible]	radiation effect	1970 (53)
Tsvetkov, V. D.	blood plasma	1969 (40)
Ushkina, N. V.	lactate dehydrogenase	1971 (48)
Vilenchik, M. M.	radiation effect	1970 (53)
Zamyatnin, A. A.	muscle physiology	1971 (42)

Dubrov and Kushcheva (41) are associated with the Laboratory of Cell Biophysics at the Institute. Reference 52 above is of special interest since it presents an investigation of combined stresses, i.e., radiation and vibration. In addition to the above articles, five of the twenty-five (54-58) were authored by persons already identified with the Institute of Biophysics, Pushchino. Reference 55 associates the authors of the article, L. V. Slozhenikina, V. L. Higshina, and A. M. Kuzin, with the Department of Radiobiology at the Institute.

UNCLASSIFIED

USSR

UDC 597.0/5-15

TSVETKOV, V. I., Laboratory of the Behavior of Lower Invertebrates, Institute of Evolutionary Morphology and Ecology of Animals imeni A. N. Severtsov, Academy of Sciences USSR, Moscow

"The Role of Sense Organs in Adaptation to Changes in Hydrostatic Pressure by the Ninespine Stickleback Pungitius pungitius L."

Moscow, Voprosy Ikhtiologii, Vol 13, No 2, 1973, pp 344-349

Abstract: The compression and decompression of the swimbladder of the ninespine stickleback in relation to the external hydrostatic pressure were investigated. The length of the time of compression or decompression was determined by the method proposed by F. A. Brown (Biol. Bull., Vol 71, No 1, 1939). Placing the fish in complete darkness did not alter the rate of compression and decompression. In experiments in which the fish were placed into a shallow layer of water with a depth only slightly greater than the fishes' body height, so that visual and tactile signals were stabilized, compression and decompression were greatly slowed down but not eliminated. The results indicated that the pressure-sensitive interoreceptors of the swimbladder bring about the regulation necessary for adaptation to changes in external pressure.

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1/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--SEARCH FOR METEORITE CRATERS ON EARTH -U-

AUTHOR-(02)-ZOTKIN, I.T., TSVETKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--ASTRONOMICHESKII VESTNIK, VOL. 4, JAN.-MAR. 1970, P. 55-65

DATE PUBLISHED-------70

SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--METEORITE, EARTH PLANET, CRATERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0878

STEP NO--UR/0454/70/004/000/0055/0065

CIRC ACCESSION NO--AP0110599

UNCLASSIFIED

2/2 021 UNCLASSIFIED

CIRC ACCESSION NO--AP0110599 PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF THE FEATURES OF METEORITE CRATERS WITH DIFFERENT DIMENSIONS AND VARYING DEGREE OF A SUBSEQUENT EROSION. THREE TYPES OF CRATERS ARE CONSIDERED: (1) IMPACT CRATERS, (2) EXPLOSIVE CRATERS, AND (3) COMPLEX CRATERS WITH DIAMETERS OVER 10 KM. DATA ON 70 CERTAIN AND POSSIBLE METEORITE CRATERS ON THE TERRITORY OF THE USSR ARE TABULATED. FACILITY: AKADEMIIA NAUK SSSR, KOMITET PO METEORITAM, MOSCOW, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--SEARCH FOR METEORITE CRATERS ON EARTH -U-

AUTHOR-(02)-ZOTKIN, I.T., TSVETKOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--ASTRONOMICHESKII VESTNIK, VOL. 4, JAN.-MAR. 1970, P. 55-65

DATE PUBLISHED----70

SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--METEORITE, EARTH PLANET, CRATERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0878

STEP NO--UR/0454/70/004/000/0055/0065

CIRC ACCESSION NO--AP0110599

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0110599

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF THE FEATURES OF METEORITE CRATERS WITH DIFFERENT DIMENSIONS AND VARYING DEGREE OF A SUBSEQUENT EROSION. THREE TYPES OF CRATERS ARE CONSIDERED: (1) IMPACT CRATERS, (2) EXPLOSIVE CRATERS, AND (3) COMPLEX CRATERS WITH DIAMETERS OVER 10 KM. DATA ON 70 CERTAIN AND POSSIBLE METEORITE CRATERS ON THE TERRITORY OF THE USSR ARE TABULATED. FACILITY: AKADEMIIA NAUK SSSR, KOMITET PO METEORITAM, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.039.9

RODIONOV, V. N., and TSVETKOV, V. M.

"Some Results of Observations in Underground Nuclear Blasts"

Moscow, Atomnaya Energiya, Vol 30, No 1, Jan 71, pp 31-36

Abstract: The mechanical effect of an underground nuclear blast is characterized by the parameters of the irradiated waves and by the sizes of the areas of the irreversibly deformed medium: cavity volume, dimensions of the crushed zone, and discharge cone. Experimental determination of the maximum volume of the cavity, which may be notably different from the final volume, and determination of the size of the rupture zone pose great difficulties. At the same time these parameters are essential for evaluating the output energy in a seismic wave.

It is deemed very important to use information contained in the compression wave in direct proximity to the failure zone for determining the parameters of the irreversible deformation of the medium in underground blasts. A comparison was made of two American underground blasts and one Soviet underground blast which all occurred in rock salt strata. Blast energy, blast

USSR

RODIONOV, V. N., and TSVETKOV, V. M., Atomnaya Energiya, Vol 30, No 1, Jan 71 pp 31-36

depth, conditions of blast testing, and final volume of the blast cavity are compared. A section of the article deals with a discussion of the compression wave and behavior of the medium outside the zone of failure. Other sections discuss a method of finding the boundary of the failure zone and the discompaction of the medium in the failure zone.

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USSR

UDC 548.0:532.783

RYUMTSEV, Ye. I., KOVSHIK, A. P., KOLOMIYETS, I. P., TSVETKOV, V. N.,
Physics Institute, Leningrad State University

"Anisotropy of Molar Refraction of Liquid-Crystal Alkoxybenzoic Acids"

Moscow, Kristallografiya, Vol 18, No 6, Nov/Dec 73, pp 1246-1249

Abstract: The prism refractor method is used to measure the indices of refraction of nematic and amorphic liquids of a homologous series of alkoxybenzoic acids. The values of molar refraction and its anisotropy are calculated for each homolog in the entire region of existence of the nematic phase. The resultant relations for refraction anisotropy as a function of the structure of the molecules are explained by the effect of flexibility -- a phenomenon which is well known for chain molecules.

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USSR

UDC 532.783

TSVETKOV, V. N., Corresponding Member of the USSR Academy of Sciences, RYUMTSEV, Ye. I., KOLOMIYETS, I. P., KOVSHIK, A. P., Leningrad State University imeni A. A. Zhdanov

"Concerning the Macroscopic Equivalence and Difference of Molecular Mechanisms of the Orienting Action of Electric and Magnetic Fields on Nematic Liquid Crystals"

Moscow, Doklady Akademii Nauk SSSR, Vol 211, No 4, 1 Aug 73, pp 821-824

Abstract: The electric-to-magnetic susceptibility anisotropy ratios were measured by the crossed-field method on a frequency of $\nu = 7 \cdot 10^5$ for several liquid crystals, and the permittivities parallel and perpendicular to the axis of nematic order were determined by the method of capacitance on the same frequency. In addition, the diamagnetic anisotropy was measured on the same substances. The resultant experimental data show that anisotropy of retardation of molecular rotation reduces the dielectric anisotropy of positively anisotropic liquid crystals and increases the anisotropy of negatively anisotropic crystals. When the dipole moment is fairly high, dispersion may change the sign of electric susceptibility anisotropy in a crystal with positive dielectric anisotropy.

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USSR

TsVETKOV, V. N. Corresponding Member of the Academy of Sciences of the USSR, KOLOMIYeTs, I. P., RYuMTsEV, Ye. I., and ALIYeV, S. M.

"A Rotating Magnetic Field as a Method of Determining the Diamagnetic Anisotropy of Nematic Liquid Crystals"

Moscow, Doklady Akademii Nauk SSSR, Vol 109, No 5, 11 Apr 73, pp 1074 - 1077

Abstract: A liquid crystal subjected to a rotating magnetic field which is sufficiently strong and not rotating too rapidly experiences mechanical forces due to the rotation of the axis of nematic order in step with the magnetic field but lagging at some angle. Under ideal conditions it would be possible to determine the diamagnetic anisotropy by knowing the moment of mechanical rotation and the lag angle for a single value of magnetic field rotational speed. Attempts have been made to do this with a torsion balance, based on the fact that the mechanical moment reaches its maximum when the lag angle is equal to $\frac{\pi}{4}$. This procedure is subject to errors because the macroscopic uniformity of the substance breaks down before the lag angle reaches this value. The authors have supplemented the procedure by observing the liquid crystal with polarized light. At extremely slow rotations the polarization is established so that the crystal is dark. As the lag angle increases, the light is permitted to pass; it is

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TsVETKOV, V. N., et al., Moscow, Doklady Akademii Nauk SSSR, Vol 109, No 5, 11 Apr 73, pp 1074 - 1077

extinguished by rotating the polarizing filters.

Both mechanical and optical measurements indicate that reliable values of lag can be determined only when the rotational speed is relatively low, before vortex effects become significant. With this restriction, the simultaneous measurement of torque moment and phase lag provides a relable method of determining diamagnetic anisotropy.

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Molecular Physics

USSR

UDC: 539.199

TSVETKOV, V. N., Corresponding Member of the USSR Academy of Sciences

"Double Electrical Beam Refraction in Stiffly Linked Polymer Molecules"

Moscow, Doklady Akademii Nauk SSSR, vol 205, No 2, 1972, pp 328-331

Abstract: Use of the electrooptical Kerr effect for investigating flexibly linked polymer molecules has proved pointless, while substantial, double electrical beam refraction has been detected in stiffly linked molecules. The present paper, therefore, discusses the balanced electrooptical characteristics of linked, kinetically stiff macromolecules and the dependence of the Kerr constant on the length of the molecular chain. Beginning his analysis with an expression for the Kerr constant in a solution of stiff molecules with axially symmetrical, optical characteristics and with the dipole orientation typical of the observed electrooptical effect, the author obtains an expression for that part of the Kerr effect introduced by the longitudinal component of the monomeric dipole. The author is connected with the A. A. Zhdanov Scientific Research Physics Institute in Leningrad.

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TSVETKOV, V. N.

Polymers

JPRS [illegible]
[illegible] Dec 72

(3)

THE RHEOLOGY OF POLYMERS

(Symposium in Moscow)

[Article by Doctor of Physical and Mathematical Sciences A. Ya. Malkin; Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol [illegible], No 8, August 1972, pp 119-121]

Rheological investigations are being developed in two directions at the present time: firstly, as a component part of physicochemical work pursuing the goal of establishment of general correspondences between the molecular structure of a substance and its macroscopic properties and, secondly, as a section of the mechanics of continua which is interested in finding connections between the kinematic and dynamic parameters of flow and in solving the corresponding boundary problems and their application to analysis of concrete technological processes. At the regular (Seventh) symposium on the rheology of polymers, organized by the Institute of Petrochemical Synthesis imeni A. V. Topchiyev of the AS USSR and held on 10-14 April in Moscow, the main attention was given to the first direction of investigations. Participating in the sessions were over 500 persons, including a group of scientists from East Germany, Poland, Czechoslovakia and Bulgaria, about 100 reports were heard. Discussed at the symposium was a broad complex of problems connected with the physics, physical chemistry and mechanics of polymeric materials, [illegible] of the molecular nature of relaxation effects in macromolecular chains, and the construction of mechanical models for the quantitative description of the behavior of a polymer under different conditions of deformation with detailed comparison of the molecular parameters of reliably characterized samples and their viscoelastic properties. Discussed with special interest was the problem of the liquid crystalline state and the influence of the physical structure of the system on its rheological properties.

The symposium was opened with the addresses of greeting of K. A. Andrianov and A. Yu. Ishlinskiy, who emphasized the

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USSR

UDC 535.33/34:539.184

PETROV, E. V., and TSVETKOV, V. P., Kommunarsk Mining and Metallurgy Institute

"K-Spectrum Absorptions of Zirconium in ZrB_2, ZrC, and ZrN Interstitial Phases"

Kiev, Metallofizika, No 40, 1972, pp 98-103

Abstract: K-spectrum absorptions were produced on an Olin spectograph by the method of Koshua. Exposures were made for the second order of reflection from the (1122) plane of a quartz crystal. The distortion function was equal to 4.5 ev. The spectra were calculated according to the close ordering theory. For estimating the varying scattering ability of the compound components, the parameter n_s was introduced. It was shown that the value of this parameter for the investigated compounds coincides with the number of weakly bonded valency electrons of the atom. 3 figures, 1 table, 8 bibliographic references.

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USSR UDC: 535.33/.34:539.184

TSVETKOV, V. P., SAVCHENKO, N. D.

"Emission X-Ray K Spectra of Silicon in Chromium Silicides"

Khim. Svyaz' v Poluprovoden. [The Chemical Bond in Semiconductors -- Collection of Works], Minsk, Nauka i Tekhn. Press, 1969, pp 93-95 (translated from Referativnyy Zhurnal Fizika, No 6, 1970, Abstract No 6D342 by the authors)

Translation: K spectra of silicon are produced in pure silicon, CrSi, and $CrSi_2$. Comparison of K_{β_x} of pure silicon and chromium silicides indicates that K_{β_x} is identical for the Si in pure silicon, CrSi, and $CrSi_2$. The semiconductor properties of chromium bisilicide may be a direct result of the presence of a partial covalent bond. Comparison of the structures of CrSi and $CrSi_2$ shows that the silicon atoms are identical in the first coordination sphere.

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USSR

UDC 669.24.053.4(088.8)

TSVETKOV, V. S., KHALEZOV, B. D., and GOLUBKOV, K. N.

"Device of Extraction of Metals from Solutions"

USSR AUthor's Certificate No 313882, filed 4/05/70, published 18/11/71, (from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G391 P by G. Svodtseva).

Translation: A device is described for extraction of metals from solutions containing a reactor, stator winding, and doser. In order to stabilize the electromagnetic field and assure continuity of theprocess, a rotor is fastened to the stator winding, mechanically connected to the doser. A drawing of the device is presented, plus a description of its operating principle.

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USSR

UDC 681.142.078

BERLINKOV, G. I., TSVETKOV, V. V.

"A Buffer Circuit"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 8, Mar 71, Author's Certificate No 296263, division H, filed 4 Dec 69, published 12 Feb 71, p 191

Translation: This Author's Certificate introduces a buffer circuit based on field-effect transistors with metal-dielectric-semiconductor (MDS) structure with induced channel. As a distinguishing feature of the device, power consumption is reduced and speed is increased by including two additional MDS transistors and an MDS capacitor in the circuit, the gates and sinks of both transistors being connected to the power supply bus, while the above-mentioned MDS capacitor is connected between the sources of the transistors. One of the plates of the capacitor is connected to the source, and the other is connected to the gate of the transistor in the preceding stage.

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USSR

UDC 621.382.322

URITSKIY, V. Ya., TSVETKOV, V. V., YURCHENKO, Ye. P.

"To the Problem of Stability of Metal-Dielectric-Semiconductor Transistors"

Elektron. tekhnika. Nauch.-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific-Technical Collection. Microelectronics), 1970, Issue 5(26), pp 154-156 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5B159)

Translation: It is shown that the effect of migration of a negative charge on the outer surface of the oxide determines to a considerable degree the stability of a metal-dielectric-semiconductor transistor, giving rise to an increase of the residual current. However, with a specific construction of the MDS transistor, the migration of the negative charge does not affect the stability of these devices. Summary.

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USSR

UDC 629.78.018.1(088.8)

BOROG, V. A., SANKOV, Ye. I., ROKITYANSKIY, R. I., SOSUL'NIKOV, I. L., TSVETKOV, Ye. A.

"Installation for Creation of an Air Stream"

USSR Author's Certificate No 309268, filed 20/05/66, published 3/09/71, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 2, 1972, Abstract No 2.41.132 P from the Resume).

Translation: This invention relates to equipment for aerodynamic research, namely installations for the creation of an air stream. Installations for the creation of an air stream are known, containing a platform and a non-moving cover installed on the platform, forming an air channel together with an attached shaped nozzle fixed relative to it, in which there is a motor with a fan and a guiding grid. These installations do not allow aerodynamic loading of individual units of an assembled aircraft at various levels and at an angle to its primary planes. The installation suggested for the creation of an air stream differs from known installations in that the cover is fastened to the platform by hydraulic lifters allowing it to be moved forward and backward and rotated by a fixed angle in the vertical plane. Furthermore, the end portion of the cover is made with guides which rotate the attached nozzle around the axis of the air channel, while the device for fixation of the nozzle relative to the cover is equipped with a hydraulic drive. 2 Figures.

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USSR

UDC 547.241

MALEVANNAYA, R. A., TSVETKOV, YE. N., and KABACHNIK, M. I., Institute of Elementoorganic Compounds, Academy of Sciences USSR

"Potassium Salts of Tetralkyldiamidophosphinylacetic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 765-769

Abstract: Experimental procedures are given for the synthesis of the ethyl esters of tetramethyl- and tetraethyldimidophosphinyl acids via reaction (I)

$$Cl_2P(O)CH_2COOC_2H_5 \xrightarrow[R=CH_3,\ C_2H_5]{R_2NH} (R_2N)_2P(O)CH_2COOC_2H_5 \qquad (I)$$

The starting material was obtained via two methods (reactions II and III):

$$(HO)_2P(O)CH_2COOH \xrightarrow{PCl_5} Cl_2P(O)CH_2COCl \xrightarrow[-50^\circ]{C_2H_5OH + C_5H_5N} Cl_2P(O)CH_2COOC_2H_5 \qquad (II)$$

$$(HO)_2P(O)CH_2COOH \xrightarrow[HCl]{C_2H_5OH} (HO)_2P(O)CH_2COOC_2H_5 \xrightarrow{KOH} \rightarrow \begin{matrix} KO \\ HO \end{matrix} P(O)CH_2COOC_2H_5 \xrightarrow{PCl_5} Cl_2P(O)CH_2COOC_2H_5 \qquad (III)$$

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MALEVANNAYA, R. A., et al., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 765-769

The $Cl_2P(O)CH_2COOC_2H_5$ was reacted with ethylmercaptan in the presence of triethylamine replacing both Cl⁻ groups with (C_2H_5S). This compound underwent base hydrolysis according to formula IV to the potassium salt.

$$(C_2H_5S)_2P(O)CH_2COOC_2H_5 \xrightarrow{KOH} \begin{matrix} KO \\ C_2H_5S \end{matrix}\!\!>\!P(O)CH_2COOC_2H_5 \qquad (IV)$$

Physical data, percent composition, NMR and IR constants are given.

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USSR

UDC 547.241

TSVETKOV, YE. N., MAKHAMATKHANOV, M. M., LOBANOV, D. I., and KABACHNIK, M. I., Institute of Elementoorganic Compounds, Academy of Sciences USSR

"Electronic Influence of Phosphorus-Containing Substituents: The σ^- and σ_m Constants for Dimethylphosphino-, Dimethylphosphinyl, dimethylethiophosphinyl, and Trimethylphosphonyl Groups"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 4, 1972, pp 769-779

Abstract: The synthesis was reported for a number of phenol derivatives having the groups $(CH_3)_2P$, $(CH_3)_2P(O)$, $(CH_3)_2P(S)$, and $CH_3)_3P^+$ in the meta and para positions. The electrophobic character (σ^- and σ_m) of each derivative was calculated. The ionization constant of each derivative was measured by potentiometric titration in water and in a 1:1 by volume mixture of ethanol and water. The influence of the σ^- and σ_m on the pK_a values (7.55 to 10.90) is essentially the same for all groups. The Bronsted equations describing the relationship between the pK_a for water and the pK_a for alcohol are given. The C-H vibrational frequencies were determined by IR; NMR spectra were also examined. All the data indicate that the studied substituents are π-acceptors and are directly related to reactive electron-donor centers.

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USSR

UDC 547.241

MIRONOVA, Z. N., TSVETKOV, Ye. N., NIKOLAYEV, A. V., and KABACHNIK, M. I., Institute of Inorganic Chemistry, Siberian Branch of the Academy of Sciences, USSR and Institute of Metalorganic Compounds, Academy of Sciences, USSR

"Syntheses Based on Tetra(hydroxymethyl)phosphonium Chloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 534-538

Abstract: Reaction of tri(chloromethyl)phosphine with alkoxides of higher alcohols yields the oxides of methyldi(alkoxymethyl)phosphine which are effective extracting agents for uranium and thorium salts from sulfate solutions. It has been shown that the oxide of methyldi(methoxymethyl)-phosphine reacts with potassium hydroxide at about 150°C splitting along the phosphorus-carbon bond to yield methylmethoxymethylphosphinic acid. Higher homologues split at 200-250° forming the respective methylalkyl ether and a salt of methylalkoxymethylphosphinic acid. The acids were isolated in form of benzhydrylammonium salts.

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USSR

UDC 547.241

MIRONOVA, Z. N., TSVETKOV, Ye. N., PETROVSKAYA, L. I., NEGREBETSKIY, V. V., NIKOLAYEV, A. V., and KABACHNIK, M. I., Institute of Inorganic Chemistry, Siberian Division, Academy of Sciences USSR, and Institute of Heteroorganic Compounds, Academy of Sciences USSR

"Synthesis Starting With Tetraoxymethylphosphine Chloride; Aminomethylphosphines and Their Oxides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 10, 1972, pp 2152-2158

Abstract: Eleven aminomethylphosphines, general formula $R_nP(CH_2NR'_2)_{3-n}$, were synthesized from tri(acetoxymethyl)phosphine, whose synthesis the authors have previously reported, and secondary amines in aqueous methanol in the presence of potassium hydroxide. This synthetic pathway is said to have fewer difficulties than those described previously, and to proceed via a saponification mechanism. The yield, boiling point, refractive index, density, observed and calculated molar refraction, percentages of C, H, and P, and formula are reported. Using hydrogen peroxide in acetone the phosphines were oxidized to their corresponding oxides. Several previous synthetic pathways are listed and some of the constants are reported for ten of these. Proton magnetic resonance and double resonance

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MIRONOVA, Z. N., et al., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 10, 1972, pp 2152-2158

were used for confirmation of structure; the chemical shift and spin-spin coupling constant of the PCH_2N interaction are given for eleven of the compounds synthesized. An intense doublet at 1130-1165 cm^{-1} in the IR spectrum of tri(dimethylaminomethyl)phosphine is interpreted as an indication of rotational isomerism. All operations with trivalent phosphorus compounds were conducted under argon.

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UDC 547.241

MALYKHANNAYA, R. A., [redacted], V. N. and KABACHNIK, M. I.; Institute of Hetero-Organic Compounds, USSR Academy of Sciences

"Dialkylphosphinylacetic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol XLI, No 11, Nov 1971, pp 2359-2364

Abstract: This study is devoted to the problem of synthesizing dialkylphosphinylacetic acids, of which only two representatives have been reported in the published literature--diethyl- and dihexylphosphinylacetic acids. Synthesized were the following: 1) dimethyl-, diethyl- and dipropylphosphinylacetic acids, using alkali hydrolysis of the corresponding butyl esters; 2) dibutylphosphinylacetic acid, by methylation of methyldibutylphosphine oxide with butyllithium and subsequent carboxylation of dibutylphosphinylmethyllithium; 3) butyl ester of dipropylphosphinylacetic acid, from the reaction of butyl chloroacetate with the potassium salt of dipropylphosphinic acid and the ester of dipropylphosphinylacetic acid; and 4) the ethyl esters of dialkylphosphinylacetic acids, through esterification of the corresponding acids.

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UDC 547.241

PETROV, E. S., TSVETKOV, Ye. N., KABACHNIK, M. I. and SHATENSHTEYN, A. I., Institute of Physical Chemistry imeni L. Ya. Karpov and Institute of Elemento-Organic Compounds, Academy of Science SSSR

"Equilibrium CH-Acidity of Some Phosphine Oxides"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, p 1172

Abstract: In studying the equilibrium CH-acidity of organophosphorus compounds, spectrophotometry was used to determine the equilibrium constants (K) at 25° for the following reactions conducted in diethylene glycol solutions: diphenylbenzylphosphine oxide (I) with fluorenyl lithium, and diphenylmethyl phosphine oxide (II) and phenyldimethyl phosphine oxide (III) with triphenylmethyl lithium. The pK_a was calculated from this data.

		K	pK_a
$(C_6H_5)_2P(O)CH_2C_6H_5$	(I)	2.1 ± 0.3 (7)	22.5
$(C_6H_5)_2P(O)CH_3$	(II)	14 ± 10 (8)	31.3
$C_6H_5P(O)(CH_3)_2$	(III)	6 ± 0.6 (4)	31.7

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PETROV, E. S., et al., Zhurnal Obshchey Khimii, Vol 41, No 5, May 1971, p 1172

A comparison of the acidities (I and II) with those of toluene and methane shows that the acidifying effect of the diphenyl phosphinoxy group is 9-10 pK_a units. A comparison of II and III shows that a substituent on the phosphorus atom (CH_3- and C_6H_5-), has little effect.

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USSR

UDC 547.29.118.07

TSVETKOV, YE. N., MALEVANNAYA, R. A., OSIPENKO, N. G., and KABACHNIK, M. I., Institute of Organo Elemental Compounds, Moscow, Academy of Sciences USSR

"A Method of Producing Phosphinylcarboxylic Acids"

Moscow, Otkrytiya, Izobrenteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1970, Author's Certificate No 270730, filed 29 May 68, p 23

Abstract: This Author's Certificate introduces a method of producing phosphinylcarboxylic acids except for α-phosphonylacetic acid. As a distinguishing feature of the patent, salts of trivalent phosphorus acids are intreacted with salts of halocarboxylic acids, except acetic, in the presence of heat with subsequent isolation of the goal product by conventional methods.

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UDC 547.241

TSVETKOV, Ye. N., and KABACHNIK, M. I., Institute of Element-Organic Compounds, Academy of Sciences USSR, Moscow

"Conjugation in the Trivalent Phosphorus Series of Compounds"

Moscow, Uspekhi Khimii, Vol 40, No 2, Feb 71, pp 177-225

Abstract: A review with 361 references. Trivalent phosphorus is usually considered as an analog of trivalent nitrogen with respect to its electronic effects. Recently it has been shown however that trivalent phosphorus containing substituents exhibit no π-donor effect which to some degree is typical of II or III period elements with unshared pairs of electrons. The trivalent phosphorus substituents manifest a π-acceptor effect, characteristic of the metaorienting groups, which is due to the interaction with vacant orbitals in the phosphorus atom. Trivalent phosphorus is thus incapable of p-π-conjugation in contrast to other II and III period elements with unshared electron pairs. The inability of the unshared pair in phosphorus to delocalize is due to its higher S-character; this is supported by the bond angles of its compounds. Physical and chemical properties of these compounds have been reviewed giving support to the hypothesis on the predominant S-character of unshared electron pair in trivalent phosphorus.

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USSR

UDC: 547.558.1

TSVETKOV, Ye. N., MAKHAMATKHANOV, M. M., LOBANOV, D. I., and KABACHNIK, M. I., Institute of Organoelemental Compounds, Academy of Sciences of the USSR

"Electronic Effect of Phosphorus-Containing Substituents. Constants σ_m of Diphenylphosphino-, Diphenylphosphinyl and Diphynylthiophosphinyl Groups"

Leningrad, Zhurnal Obshchey Khimii, Vol 40 (102), No 11, Nov 70, pp 2387-2390

Abstract: This paper is a continuation of research on synthesis of phosphorus-containing phenols and determination of their ionization constants. The constants σ_m are calculated for the $(C_6H_5)_2P$-, $(C_6H_5)_2P(O)$- and $(C_6H_5)_2P(S)$-groups by using the ionization constants of the corresponding meta-substituted phenols. The phosphorus-containing phenols -- m-diphenylphosphino-, m-diphenylphosphinyl-, and m-diphenylthio-phosphinylphenols -- were synthesized by Lamza's method (J. pr. Chem., 25, p 294, 1964). The ionization constants of these phenols were determined by potentiometric titration in a water-alcohol mixture (1:1 by volume) at 25°C. The constants σ_m were then calculated by a previously derived formula. The results are tabulated.

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